

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:
It does not include the notary's date, or the notary's date is in the wrong place.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show optics 43 as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 40 in Fig 1.

4. The drawings are objected to because it is confusing what the drawing with reference numbers 30 and 40 represents in Fig 1. Is it part of Fig 1, or is it a drawing from another angle?

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure

is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: System and method for printing a pattern using saturable absorber.

6. The disclosure is objected to because of the following informalities:

In Par 003, "his" should be changed to --its--.

In Par 0015, there is no closing parenthesis for "(at the center of the beam, such as a portion of the beam illuminates the radiation sensitive layer 14."

In Par 0016, "having a wavelength of few hundred nanometer and even less" should be revised to --having a wavelength of a few hundred nanometers or even less--.

Appropriate correction is required.

Claim Objections

7. Claims 1 and 5 objected to because of the following informalities: The word "bean" is misspelled; it should be --beam--. Appropriate correction is required.
8. Claim 1 is objected to because of the following informalities: "an saturable absorber" should be --a saturable absorber--. Appropriate correction is required.
9. Claims 2 and 6 are objected to because of the following informalities: "at least one beam of radiation" already has antecedent basis from claims 1 and 5, respectively, and should be changed to --the at least one beam of radiation--. Appropriate correction is required.
10. Claim 5 is objected to because of the following informalities: "An system" should be changed to --A system--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

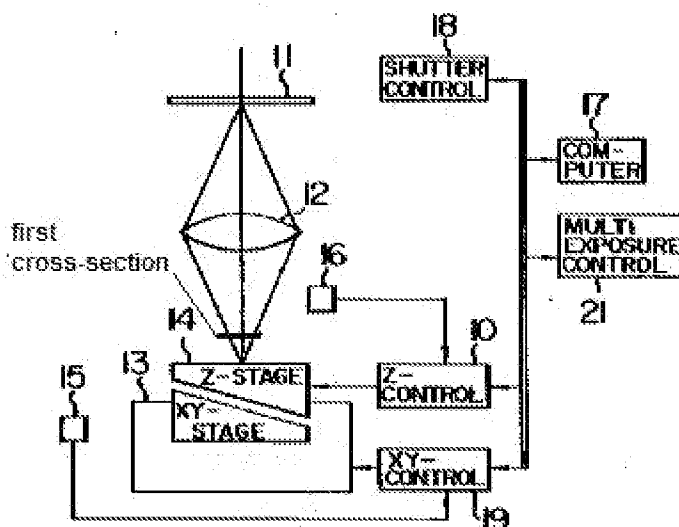
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda et al (4,904,569).

Re claims 5 and 1: Fukuda discloses a system [Fig 3] for recording a pattern 11, comprising:
a controller 17, for determining an illumination scheme [via multi-image using exposure control system 21] in response to the pattern; and

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optics [shutter controlled by shutter control system 18], coupled to the controller, for directing, in response to the determination, at least one beam of radiation [C11L62-63: excimer laser] having a first cross-section [see line in Drawing 1] towards a reversible transmission film 44 so as to allow a portion of said beam to propagate towards a radiation sensitive layer 42, wherein the portion has a second cross-section [see grooves between resist pattern 46 in Fig 8d] that is smaller than the first cross-section.

FIG. 3**Drawing 1** Location of first cross-section shown.

Fukuda does not disclose expressly a saturable absorber.

However, Fukuda teaches, in C13L43-50, "Further, the transparency of the reversible transmission film depends upon the quantity of exposure light. That is, when a large quantity of exposure light is incident on the reversible transmission film, the

transparency thereof is high. While, when a small quantity of exposure light is incident on the reversible transmission film, the film is not so transparent.”

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to recognize that the reversible transmission film 44 of Fukuda has the same properties as a saturable absorber, for the purpose of forming sharp patterns to achieve devices with better performance.

Re claims 6 and 2: Fukuda discloses wherein the optics are adapted to focus the at least one beam of radiation onto an intermediate layer 43.

Re claims 7 and 3: Fukuda discloses wherein the second cross-section [see Fig 8d] is about half of the first cross-section [see Drawing 1].

Re claims 8 and 4: Fukuda discloses wherein the controller is adapted to control an intensity of the beam of radiation to achieve a certain second cross-section. [C17L6-12: "Further, it is possible to cause the bleaching characteristic of the reversible transmission film to match with the sensitivity of the photoresist layer by appropriately selecting the exposure light quantity and the number of exposure operations, and hence the reversible transmission film can act as an efficient contrast enhancement layer.”]

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Liu whose telephone number is 571-272-9019. The examiner can normally be reached on Monday through Friday 9 am - 5 pm EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on 571-272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Michael Liu
Examiner
Art Unit 2851

ML 6/11/08

/Diane I Lee/
Supervisory Patent Examiner, Art Unit 2851